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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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07/23/2001

Siv Leth

19378.0010

2617

7590

09/09/2004

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EXAMINER

MICHALSKI, JUSTIN I

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/857,974

Applicant(s)

LETH ET AL.

Examiner

Justin Michalski

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1, 2, 3, 4, 5, 8,, 9, 10, 11, and 12 are objected to because of the following informalities:

Claims 1, 4, 5, 8, 11, and 12 contain reference characters that are not present in Figure 1. Appropriate correction is required.

Claim 2 recites the limitation "monitor sensors" in line 2. There is insufficient antecedent basis for this limitation since claim 1 sets forth "a third number of monitor sensors" which can be interpreted as 1 sensor. Appropriate correction is required.

Claim 3 recites the limitation "control sensors" in line 2. There is insufficient antecedent basis for this limitation since claim 1 sets forth "a second number of control sensors" which can be interpreted as 1 sensor. Appropriate correction is required.

Claim 9 recites the limitation "monitor sensors" in line 2. There is insufficient antecedent basis for this limitation since claim 8 sets forth "a third number of monitor sensors" which can be interpreted as 1 sensor. Appropriate correction is required.

Claim 10 recites the limitation "control sensors" in line 2. There is insufficient antecedent basis for this limitation since claim 8 sets forth "a second number of control sensors" which can be interpreted as 1 sensor. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2644

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Swinbanks (4,596,033).

Regarding claims 1 and 8, Swinbanks discloses a method of actively reducing the level of a primary field of sound or vibrations in a space (Figure 2), comprising the steps of:

providing a first number of actuators (4) in the space to produce a secondary field of sound or vibration (field to right of speaker 4), which is adapted to interfere with the primary field (field to left of speaker 4);

providing a second number of control sensors in the space to sense a parameter related to the residual level of the primary field and the secondary field (8); and

determining a first transfer matrix (signal from 8 to 13) defining for each control sensor the level of the parameter caused by a certain level of excitation from each actuator, characterized by providing, during an initial, provisional period of time, a third number of monitor sensors (3) in the space to sense the parameter related to the level of the primary field;

determining a second transfer matrix defining for each monitor sensor the level of the parameter caused by a certain level from each actuator (signal from 3 to 13); and

controlling the actuators by means of a force vector (signal from 5 to 4) being a function of the first transfer matrix (signal from 8 to 13), a first projection matrix reflecting the relation between the first transfer matrix and said second transfer matrix (Swinbanks

discloses inverted matrices, i.e. reflecting, Col 5 line 63 through Col 6. line 1), a second projection matrix (signal from 3 to 13) reflecting the relations between the parameter sensed by the control sensors and the parameter sensed by said monitor sensors (Swinbanks discloses inverted matrices, i.e. reflected, Col 5 line 63 through Col 6. line 1), and a residual vector of the actual level of the parameter at the control sensors (signal from 4 to 8). Including control units 13, 15, 10 and 5.

Regarding claims 2 and 9, Swinbanks further discloses providing said monitor sensors at respective positions at which a significant reduction of the level of the primary field is desired (in duct 9).

Regarding Claims 3 and 10, Swinbanks further discloses providing the control sensors at locations removed from the positions of said monitor sensors (Figure 2 discloses sensor 3 removed from sensor 8).

Regarding Claims 4 and 11, Swinbanks further discloses producing said force vector by the multiplication of the pseudo inverse of the first transfer matrix, said first projection matrix, said first projection matrix, the pseudo inverse of the said second projection matrix, and said residual vector (Figure 2 discloses all matrices being an input function to analyzers and processors 13, 15, 10, and 5 which will inherently include multiplication functions in order to produce a filtered and corrected audio output for actuator 4 (see equations 1, 2, and 3).

Regarding Claims 5 and 12, Swinbanks further discloses reducing the number of control sensors included in the first projection matrix and the second projection matrix to include only an optimal set of control sensors for projecting each monitor sensor (It is

inherent that the control sensors are reduced to be optimized since the device would not function with one less (or zero) sensors).

Regarding Claims 6 and 7, Swinbanks further discloses that the parameter comprises sound (i.e. pressure and vibration), see speaker 4.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Billoud (US patent 6,343,127) discloses a noise cancellation system comprising a plurality of speakers and sensors.


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (703)305-5598. The examiner can normally be reached on 8 Hours, 5 day/week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM

  
JIM  
PRIMARY EXAMINER